WORKFORCE

CAPITALIZING ON OUR HUMAN ASSETS

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BOOMS DON'T HAVE TO GO BUST

In a tumultuous and challenging era, Texas has been blessed in many ways.

Our state is growing fast. We're drawing tens of thousands of new residents each year, from every state in the union, seeking the opportunities created by a vibrant economy.

Low costs, business-friendly regulation and a large, young and willing workforce have made Texas one of the few bright spots in a chronically weak national picture. And if that's all it took to ensure our success continues in the 21st century, we could rest easy.

But we can't. Technological advances are creating new industries, new professions and new demands. Some of the hottest careers didn't even exist a decade or two ago. Today's businesses seek unprecedented levels of education and training in their employees.

The very nature of work itself is changing, and Texas has to be ready to respond.

New workforce entrants will need the proper skills to replace our retiring baby boomers. We can transform thousands of underemployed workers into a dynamic component of industries rich in science and technology. We can provide the manpower — and the brainpower — sought in vibrant cities such as San Antonio.

In 2008, our **Texas Works** report discussed the labor needs of our burgeoning economy. Texas has only continued to grow since then — by leaps and bounds. Texans have taken steps to keep pace with the growth. For example, the Legislature followed our recommendation and created a Jobs and Education for Texans fund that will train more than 69,000 students, yet our economy is so strong that some shortages remain.

In this report, we examine the challenge of reducing these shortages, and make recommendations that would help Texas continue to enjoy prosperity in coming decades.

A GREAT ECONOMIC TRACK RECORD

In recent years, those who study workforce trends have discovered an odd paradox: At a time when unemployment is hovering at concerning heights in many states and nations, **millions of jobs remain unfilled**.

The explanation for this puzzle is rooted in the changing nature of work. Today's best jobs — and increasingly, **most** jobs — require ever more sophisticated levels of specialized knowledge and technical expertise. Even traditional blue-collar occupations are being redefined by technology; employees on the shop floor use computer-aided manufacturing systems, while welding is an increasingly automated process.

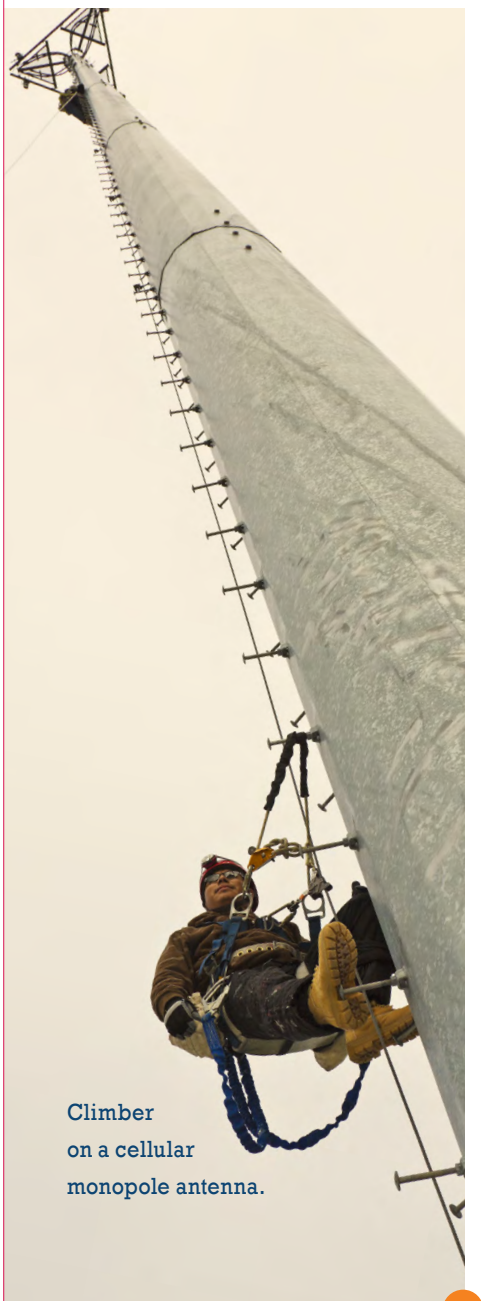
In this environment, technical skills must be continually **upgraded**. Tomorrow's jobs will come with an expectation of **lifelong learning**.

Similarly, rapid technological change means that the old pattern of lifelong employment in a single field is almost **extinct**. Employment has become increasingly nomadic; workers may have many jobs in a lifetime, and need **transferable** and **constantly updated skills**.

Thus the challenge facing Texas is twofold. We must:

- ensure our young people can acquire the **skills sought by Texas employers**, and
- assist them in refining and upgrading their skills **throughout their careers**.

Today's best jobs — and increasingly, **most** jobs — require ever more sophisticated levels of specialized knowledge and technical expertise.



Climber on a cellular monopole antenna.

SECTION ONE HIGHLIGHTS

- Texas is a relatively young state with a growing under-18 population.
- This trend stands in stark contrast to the working-age declines expected in most of the world.
- This should position Texas to have a strong workforce.
- Many of the fastest growing industries require post-secondary training.
- Texas workers will benefit from post-secondary education.

DEMOGRAPHIC ADVANTAGES... AND DISADVANTAGES

GROWTH SPURT FOR TEXAS

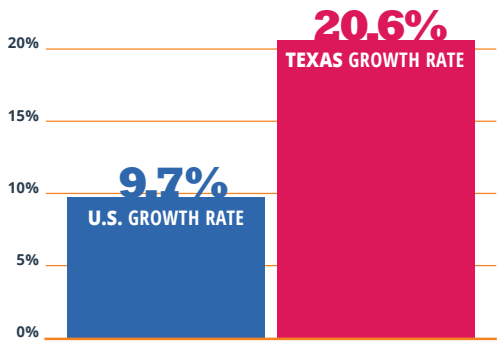
Texas has a young and growing population. This **could prove to be an economic asset** – or a liability – for our state.

A stagnant working-age population can indicate economic trouble. It forces smaller populations of workers to support growing numbers of retirees.

Texas' young population – defined as those under the age of 18 – defies trends seen in many other states and developed countries. It keeps growing, which means that Texas has a huge potential source of workers to trim skills gaps (see Page 13) and meet employer demands – if this youthful cohort receives the proper training and education.

U.S. VS. TEXAS GROWTH RATE

2000-2010



SOURCE: U.S. Census Bureau.

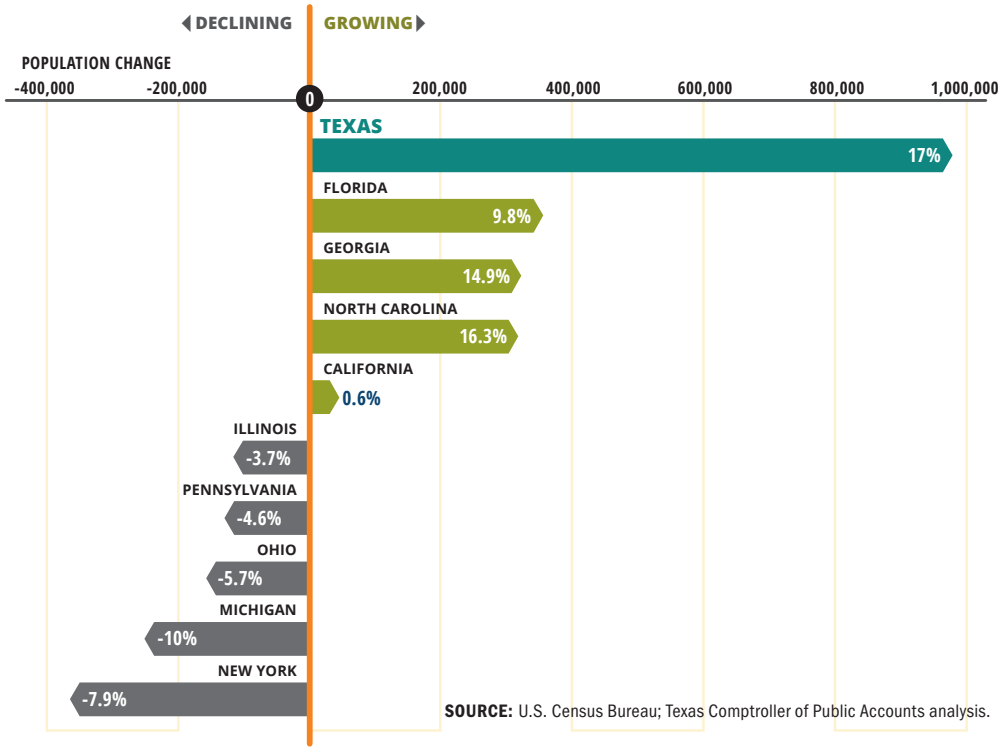
Texas outpaced U.S. population growth in every decade of the 20th century. It more than doubled the U.S. growth rate from 2000 to 2010, at **20.6 percent** versus **9.7 percent**.

THE YOUTH FACTOR

Between 2000 and 2010, Texas' under-18 population rose by more than **979,000** or **17 percent** – **6.5 times faster** than the U.S. average of **2.6 percent**.

TOTAL UNDER-18 POPULATION CHANGE IN THE 10 MOST POPULOUS STATES

2000-2010



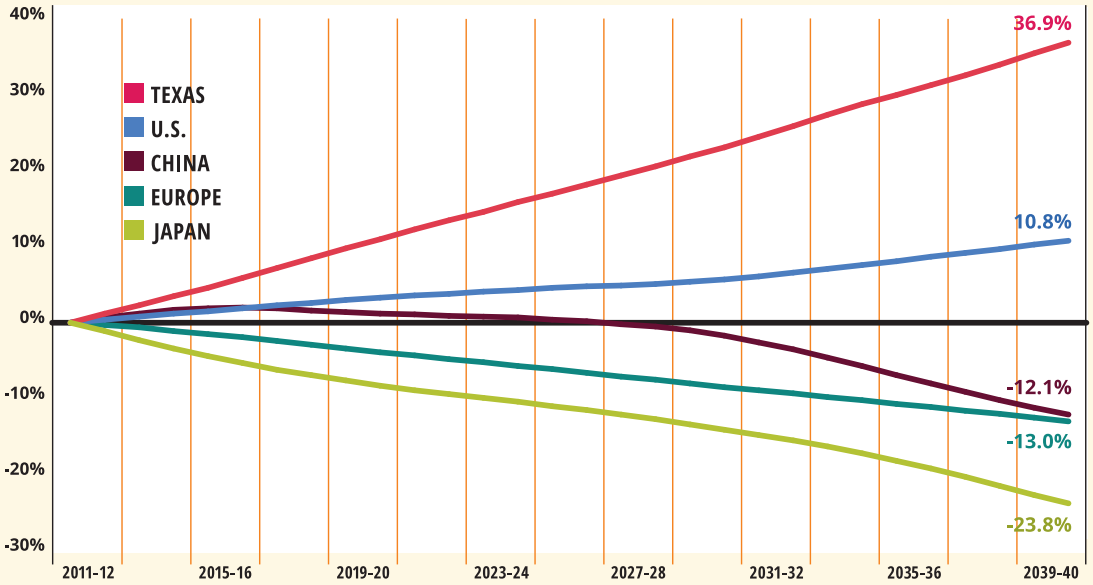
SOURCE: U.S. Census Bureau; Texas Comptroller of Public Accounts analysis.

BUCKING TRENDS

Texas' workforce growth stands in stark contrast to trends seen in the nation and in other countries.

CHANGE IN WORKING-AGE POPULATIONS (AGES 15-64)

2011-2040



The Texas workforce is projected to **grow** faster than the U.S. workforce between 2011 and 2040, according to the Texas State Data Center.

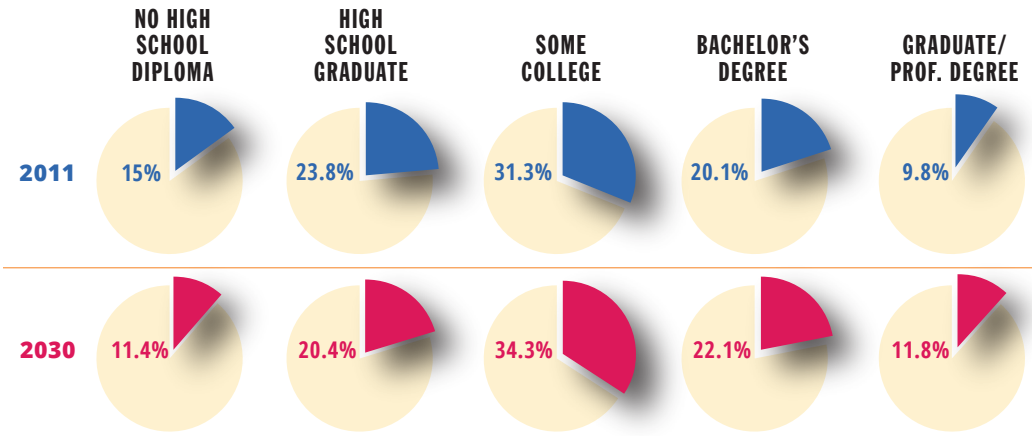
In Europe, China and Japan, the workforce is expected to **decline** during the same period.

SOURCE: United Nations Department of Economic and Social Affairs; Texas State Data Center; Texas Comptroller of Public Accounts analysis.
Data model assumes moderate migration.

MORE EDUCATION NEEDED

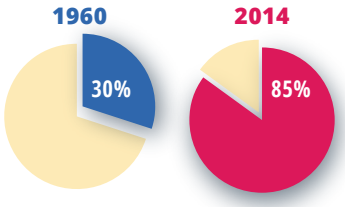
The Texas labor force should see some educational improvements in the near future. The Texas State Data Center projects that the share of the labor force with at least some college education will increase from **61.2 percent** in 2011 to **68.2 percent** in 2030. Despite these gains, the Texas state demographer stresses that Texas will still rank toward the bottom of all U.S. states in overall educational attainment. Texas, however, can take steps to improve these numbers.

HOW EDUCATED WILL WE BE IN 2030?



SOURCE: Texas State Data Center, University of Texas at San Antonio.

PERCENTAGE OF U.S. JOBS REQUIRING A POST-SECONDARY EDUCATION



Workforce entrants without post-secondary education will find fewer of the high-paying middle-class jobs that were available for **ambitious** baby boomers.

SOURCE: ReCareerist.com

Texas workers benefited from **wage growth** in all wage quartiles.

"GOOD JOBS" EMERGING

Texas appears to be leading the nation in the creation of "good jobs" on the middle of the pay scale.

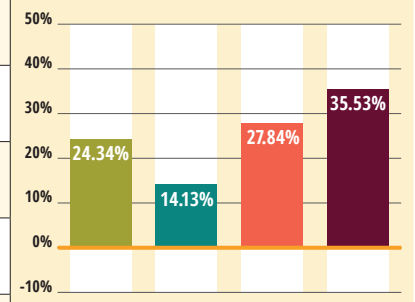
A March 2014 report released by the Federal Reserve Bank of Dallas shows that over the past **13 years**, Texas led the nation in creating jobs at all pay levels. Texas workers benefited from wage growth in even the two middle quartiles (middle wages), where growth in the rest of the nation remained flat or shrank.

EMPLOYMENT CHANGE BY WAGE GROUP

SINCE 2000

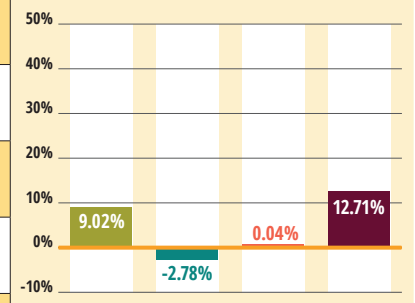
TEXAS

HOURLY WAGES BY QUARTILE	EMPLOYMENT (2000)	EMPLOYMENT (2013)	GROWTH IN JOBS BY QUARTILE
LOWEST Less than $11.42	2,579,234	3,207,087	
LOW-MIDDLE $11.42-$16.92	2,110,464	2,408,711	
UPPER-MIDDLE $16.92-$26.04	1,841,554	2,354,226	
HIGHEST Above $26.04	1,740,517	2,358,835	
TOTAL	**8,271,769**	**10,328,860**	TOTAL CHANGE **24.87%**



U.S. MINUS TEXAS

HOURLY WAGES BY QUARTILE	EMPLOYMENT (2000)	EMPLOYMENT (2013)	GROWTH IN JOBS BY QUARTILE
LOWEST Less than $11.42	25,822,096	28,151,742	
LOW-MIDDLE $11.42-$16.92	26,279,623	25,548,228	
UPPER-MIDDLE $16.92-$26.04	26,626,195	26,637,611	
HIGHEST Above $26.04	26,741,667	30,140,195	
TOTAL	**105,469,582**	**110,477,776**	TOTAL CHANGE **4.75%**



NOTE: Wages are in real December 2013 dollars.
SOURCE: Federal Reserve Bank of Dallas.

WHY TEXAS NEEDS MORE SKILLED EMPLOYEES

Texas has a strong presence of industries such as biotech, advanced manufacturing and shale gas exploration that are expected to drive 21st century prosperity. These industries will require more workers with education and, in some cases, very specialized job skills.

TECHNOLOGY

2ND

TEXAS RANKS **SECOND** NATIONALLY IN **TECHNOLOGY EMPLOYMENT**.

485,600

NUMBER OF **TECHNOLOGY JOBS** IN TEXAS.

$96,200

THEIR **AVERAGE WAGES**.

THEY ARE

85%

HIGHER THAN THE STATE'S AVERAGE PRIVATE-SECTOR WAGE.

$48.2 BILLION

TOTAL OF COMPUTERS AND ELECTRONIC PRODUCTS **EXPORTED** BY TEXAS IN 2013, OUR **SECOND-LARGEST** EXPORT CATEGORY.

AEROSPACE

TEXAS EMPLOYS MORE **AIRCRAFT MECHANICS** AND **AVIONICS TECHNICIANS** THAN ANY OTHER STATE.

2ND

TEXAS RANKS **SECOND** NATIONALLY IN **AEROSPACE MANUFACTURING** OUTPUT.

Texas also ranks in the

TOP TEN

in these categories:

MACHINERY

ELECTRICAL EQUIPMENT

TRANSPORTATION EQUIPMENT

SOURCE: Tech America Foundation; Texas Office of the Governor; U.S. International Trade Administration.

RECOMMENDATION

Find suggestions on how to increase secondary and postsecondary educational attainment. See pages 20-21.

WORK SMARTER

Find out more about how an influx of baby boomers to our cities, and a new workforce composition, will impact our economy by visiting www.TXworkers.org/aging/.

These fast-growing positions pay near or above Texas' average annual salary earnings.

FOLLOW THE MONEY

The occupations listed below are some of the fastest growing in the state that pay near or above Texas' median earnings. They are concentrated in education, health services and business services such as administration and accounting. Many require a bachelor's degree or higher, technical training, certification and/or on-the-job training.

TEXAS EMPLOYMENT PROJECTIONS

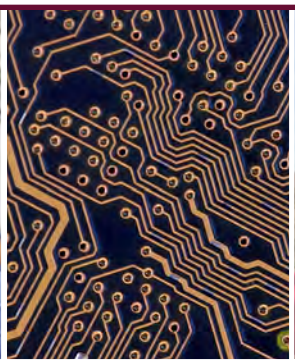
Occupations with Earnings Near or Above the Median Salary Earnings

- Positions requiring an **associate's degree**, **postsecondary** or **some college** attainment.
- Positions requiring a **bachelor's degree** or **higher**.

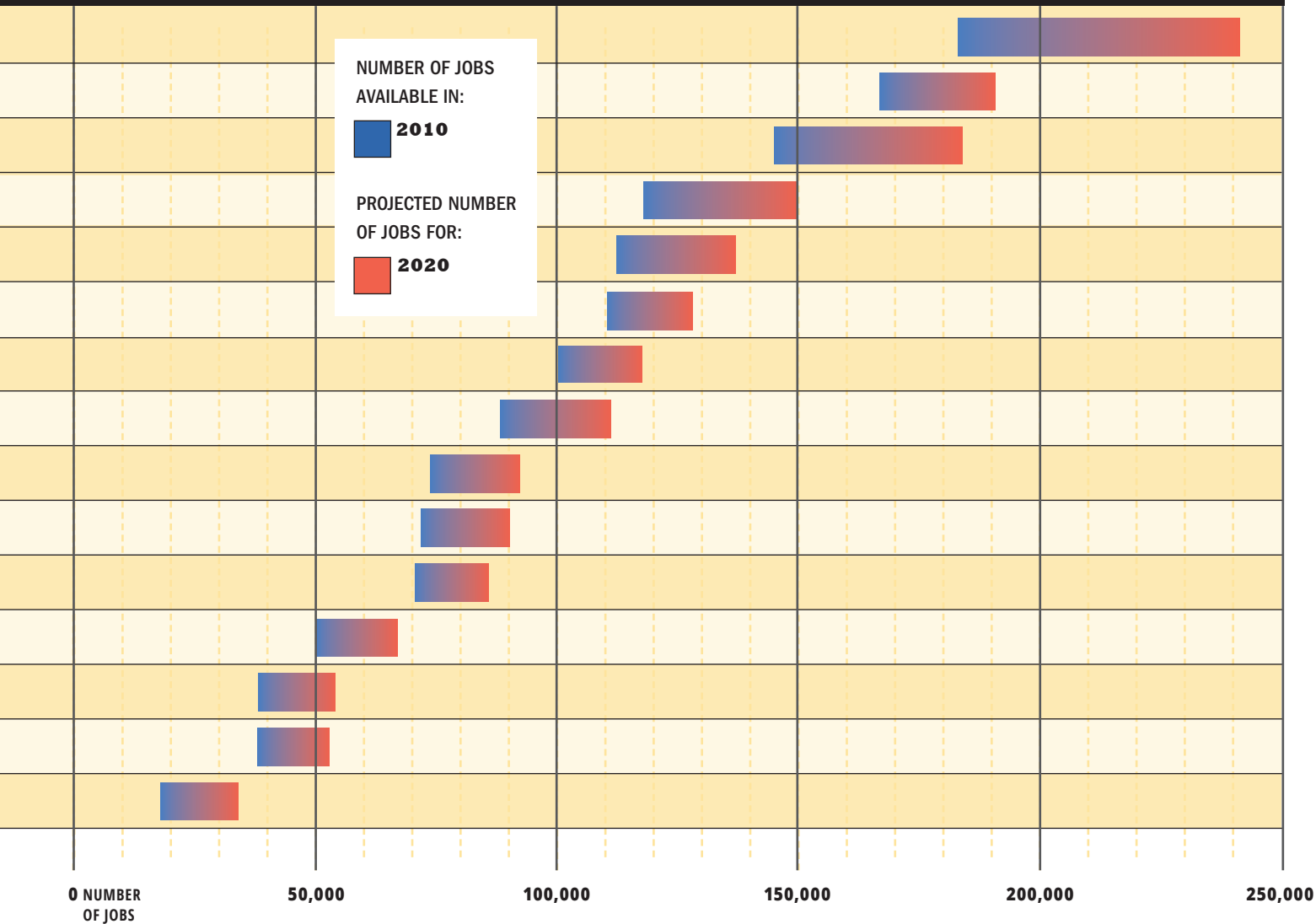
The **FIVE** occupations with the highest median earnings are highlighted with a *.

EDUCATION/TRAINING	MEDIAN HOURLY EARNINGS	OCCUPATIONS
ASSOCIATE'S DEGREE	$31.60*	REGISTERED NURSES
BACHELOR'S DEGREE PLUS WORK EXPERIENCE	$44.53*	GENERAL & OPERATIONS MANAGERS
BACHELOR'S DEGREE	$23.68	ELEMENTARY SCHOOL TEACHERS, EXCEPT SPECIAL EDUCATION
MODERATE-TERM ON-THE-JOB TRAINING	$25.91	SALES REPS., WHOLESALE & MFG., EXCEPT TECHNICAL & SCIENTIFIC PRODUCTS
WORK EXPERIENCE IN A RELATED OCCUPATION	$23.55	FIRST-LINE SUPERVISORS OF OFFICE & ADMINISTRATIVE SUPPORT WORKERS
DOCTORAL DEGREE	$29.22	POSTSECONDARY TEACHERS
BACHELOR'S DEGREE	$24.73	SECONDARY SCHOOL TEACHERS, EXCEPT SPECIAL & CAREER/TECHNICAL EDUCATION
BACHELOR'S DEGREE	$30.37*	ACCOUNTANTS & AUDITORS
POSTSECONDARY NON-DEGREE AWARD	$20.43	LICENSED PRACTICAL & LICENSED VOCATIONAL NURSES
BACHELOR'S DEGREE	$23.97	MIDDLE SCHOOL TEACHERS, EXCEPT SPECIAL & CAREER/TECHNICAL EDUCATION
LONG-TERM ON-THE-JOB TRAINING	$33.11*	BUSINESS OPERATIONS SPECIALISTS, ALL OTHER
WORK EXPERIENCE IN A RELATED OCCUPATION	$26.64	FIRST-LINE SUPERVISORS OF CONSTRUCTION TRADES AND EXTRACTION WORKERS
POSTSECONDARY NON-DEGREE AWARD	$17.01	WELDERS, CUTTERS, SOLDERERS & BRAZERS
BACHELOR'S DEGREE	$43.88*	SOFTWARE DEVELOPERS, APPLICATIONS
MODERATE-TERM ON-THE-JOB TRAINING	$18.88	SERVICE UNIT OPERATORS, OIL, GAS & MINING

SOURCE: Economic Modeling Specialists Intl.; Texas Comptroller of Public Accounts analysis.


PROJECTIONS



SOURCE: Economic Modeling Specialists Intl.; Texas Comptroller of Public Accounts analysis.

ADVANCED INDUSTRIES BY THE NUMBERS

23

THE NUMBER OF **ADVANCED INDUSTRIES** IDENTIFIED IN TEXAS. THEY INCLUDED MANUFACTURING ACTIVITIES IN:

PHARMACEUTICALS
AEROSPACE
ADVANCED MACHINERY
SOFTWARE
COMPUTER SYSTEMS DESIGN

5%

SHARE OF JOBS THAT WERE IN **ADVANCED INDUSTRIES** IN TEXAS IN 2013.

THE NEW MANUFACTURING: SLIMMED DOWN AND HIGHLY SKILLED

More than eight percent of net jobs gained in Texas from 2010-13 — and more than one in five in the Austin-Round Rock-San Marcos area — were in "advanced industries" (AI), characterized by above-average investments in research and development, plus high proportions of science, technology or engineering workers.

EMPLOYMENT IN "ADVANCED INDUSTRIES" (AI)

2010-2013

METROPOLITAN STATISTICAL AREA	EMPLOYMENT (2013)	TOTAL EMPLOYMENT GROWTH (2010-2013)	AI'S SHARE OF TOTAL EMPLOYMENT (2013)	AI'S SHARE OF TOTAL EMPLOYMENT GROWTH (2010-2013)
AUSTIN-ROUND ROCK-SAN MARCOS	80,105	80,105 / 63,079	9.6%	21.3%
DALLAS-FORT WORTH-ARLINGTON	233,920	233,920 / 210,682	7.6%	9.7%
EL PASO	7,157	7,157 / 6,157	2.6%	13.7%
HOUSTON-THE WOODLANDS-SUGAR LAND	107,131	107,131 / 96,242	3.9%	4.3%
MCALLEN-EDINBURG-MISSION	1,816	1,816 / 1,708	0.8%	0.8%
SAN ANTONIO-NEW BRAUNFELS	40,522	40,522 / 33,882	4.6%	14.5%
TEXAS	**547,023**	547,023 / 476,483	5.0%	8.5%

SOURCE: Economic Modeling Specialists Intl.; Texas Comptroller of Public Accounts analysis (industries identified by Brookings Institution).

NEEDS EVOLVE OVER TIME

The constant advance of technical processes and capabilities means that employee **skills** are expected to **evolve over time**. In this rapidly changing environment, employees may have many jobs and more than one career in a lifetime, and need **transferable** and **constantly updated skills**.

5 YEARS Amount of time it takes freshly minted **college degrees** in technical fields to **become outdated**.

16 MONTHS Average span of time it takes **workers** in their **mid-20s** to **change jobs**.

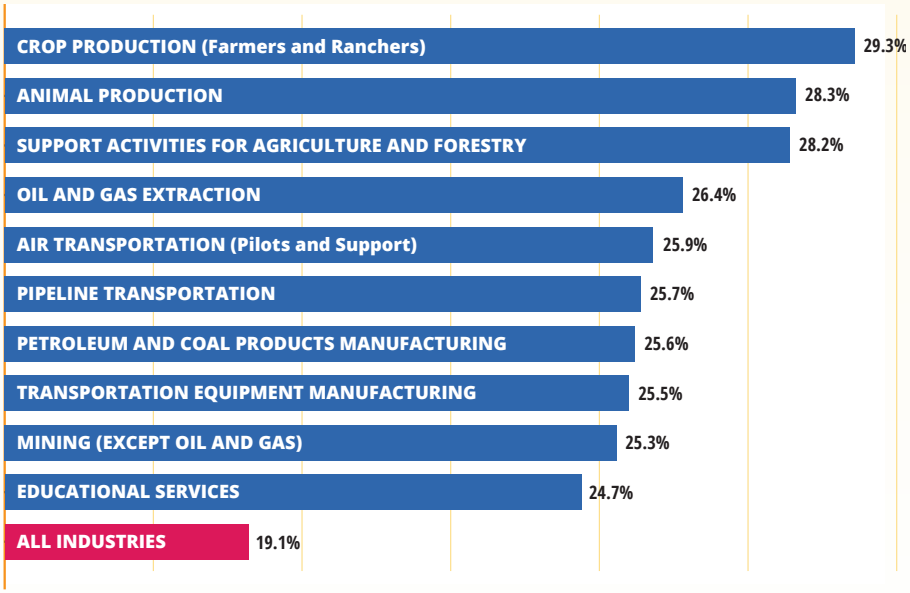
SOURCE: Harvard Business Review; Fortune.

BOOMER RETIREMENTS

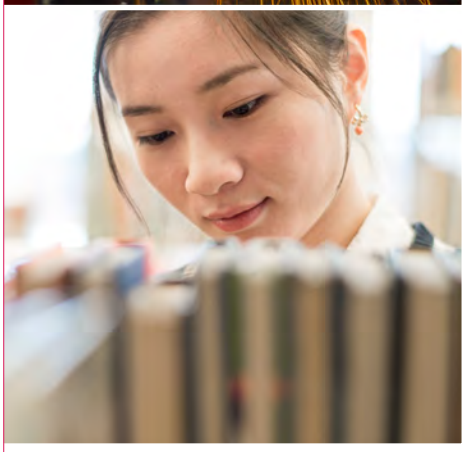
The need for skilled workers will likely increase in coming decades. Texas, like the rest of the U.S. and the world, is in the early stages of a significant population shift. Members of the baby boom generation have reached — or are approaching — the end of their careers, taking decades of experience and knowledge into retirement.

PERCENT OF TEXAS WORKERS AGE 55 AND OLDER

THIRD QUARTER, 2013



SOURCE: U.S. Census Bureau Longitudinal Employer-Household Dynamics; Texas Comptroller of Public Accounts analysis.



WORK SMARTER

The retirement of the baby boom generation will create challenges for employers. Millions of seasoned employees will leave the workforce during the next decade – though maybe not as quickly as first expected. To see why, visit www.TXworkers.org/aging/.

SECTION TWO HIGHLIGHTS

- In some cities and industries, employers say skills gaps have begun to emerge.
- Strong economic growth has created some worker shortages.

FILLING GAPS

HELP WANTED

So what happens when you have a growth of skilled positions and a lack of candidates qualified to fill them? A gap emerges. Jobs go unfilled while unemployment rises.

Such is the case across much of the post-recession U.S., according to some experts.

Many **companies say they cannot find workers with the skills** and competencies they need.

The skills employers need — and can't find — are predominately "**knowledge based**," related to **information technology** and allied **technical skills**.

U.S. EMPLOYERS STILL HAVEN'T FOUND WHAT THEY'RE LOOKING FOR

85% of jobs created between 2000 and 2010 required complex knowledge and skills, according to McKinsey & Company.

80% of respondents to a 2012 Aviation Week survey of aviation/aerospace companies cited a highly skilled workforce as "most important" to their success.

45% of American employers attribute entry-level vacancies to inadequate skills, according to a 2012 survey by McKinsey & Company.

49% of American businesses reported a lack of qualified job candidates in a 2012 survey by staffing agency ManpowerGroup.

HOW SPOT SHORTAGES OCCUR: PETROLEUM ENGINEERING

Meeting the demand of a booming energy sector, 33 petroleum engineering programs across the U.S. enroll more than **11,000 students**.

Petroleum engineering enrollment drops to fewer than **1,800 students** nationwide.

1983

Crude oil prices collapse, causing a bust. Hiring drops. Universities begin shuttering their programs.

1986

1991

DOES THE SKILLS GAP EXIST IN TEXAS?

Texas' skills gaps, where they do exist, tend to be concentrated in certain industries or regions. Call them **spot shortages**.

A burgeoning economy may have created more jobs than Texas can immediately fill. Issues include retirements of an aging workforce, rapidly evolving emerging technologies and increased labor demands due to manufacturing activity returning to the U.S. Shortages are more acute in fast-growing cities or industries as businesses compete for a limited pool of employees (see timeline below). Businesses, particularly manufacturers, can ease shortages by offering apprenticeships and in-house training.

In early 2012, the Federal Reserve Bank of Dallas convened a roundtable of **San Antonio** employers that included representatives from **manufacturing companies**, the **military**, **financial institutions** and **workforce development entities**.

WHERE WORKER SHORTAGES ARE GREATEST:

- **HIGH-SKILL JOBS**
  Typically require a **bachelor's degree** or better in areas related to science, technology, engineering or mathematics.
- **MIDDLE-SKILL JOBS**
  Specialized careers that may require **certification** but not necessarily a bachelor's degree.

Interestingly, the skills gap appears to be greatest for middle-skill jobs that do not require a college degree.

Employers said they had trouble "finding workers with sufficient skills for higher-level technical jobs, such as those in machinery, engineering and programming."

According to the Boston Consulting Group (in 2012), **San Antonio** was **one of five U.S. metro areas to have significant or severe worker shortages**. The highest-need occupations were **welders, machinists, and industrial-machinery mechanics** — many of which **pay above Texas' median annual salary** (see Page 8).

RECOMMENDATION

Find out how apprenticeship programs could help ease worker shortages. See pages 20-21.

2007

Petroleum engineers who survived the '90s begin nearing retirement. Companies increase hiring, but must compete among a depleted candidate pool.

Officials at one university report that their graduates enjoy basically guaranteed employment with **six-figure starting salaries**.

2010

A resurging energy industry exacerbates retirement losses. Hiring increases. Employment **nearly doubles** from 2005 to 2010.

2012

Nearly 2,200 freshmen enroll in petroleum engineering programs – **a 55 percent** jump from 2011.

2013

Salaries continue rising. A salary survey reports global base pay increases of **6.5 percent** over 2012.

SOURCE: Businessweek; Journal of Petroleum Technology; Lloyd Heinze, Texas Tech University.

THE CASE FOR TRAINING

- Texas creates a friendly environment for business, yet many Texans need post-secondary training for "good jobs."
- Underutilized manpower includes those underemployed and undereducated.
- Texas needs more funding for adult training, especially for jobs in high-growth industries.

OPEN FOR BUSINESS

Texas creates an environment friendly to business. In a recent report, researchers for UCLA Anderson Forecast noted that flourishing metro areas like Houston and San Antonio make up for low-educated workforces by offering a hospitable business environment.

But thousands of Texans could benefit from additional training to fill jobs in the state's hottest growth sectors. These Texans include the unemployed, underemployed or those who lack the credentials to secure high-paying jobs.

2014 THUMBTACK SMALL BUSINESS FRIENDLINESS SURVEY

COMPARING TEXAS TO CALIFORNIA

	TEXAS	CALIFORNIA
OVERALL FRIENDLINESS	A+	F
EASE OF STARTING A BUSINESS	A+	F
EASE OF HIRING	A	B-
REGULATIONS	A+	F
HEALTH AND SAFETY	A+	F
EMPLOYMENT, LABOR AND HIRING	A+	F
TAX CODE	A+	D
LICENSING	A	D
ENVIRONMENTAL	A+	F
ZONING	A+	D
TRAINING AND NETWORK PROGRAMS	A	C-

RATINGS OF INDIVIDUAL CITIES

HOUSTON A+ SAN ANTONIO A LOS ANGELES D

SOURCE: 2014 Thumbtack.com Small Business Survey, in partnership with the Kauffman Foundation.

AN UNTAPPED RESOURCE

As previously noted, Texas workers will increasingly need post-secondary education to land middle-wage jobs. Texas has thousands of workers who could benefit from acquiring the skills required for these positions.

If they receive the education they require, they could provide a vast untapped resource.

Texas provides **adult education services** for those **over 15 years of age** who lack basic educational skills. However, Texas ranks low in the funding it provides compared to the portion of its population that lacks a high school diploma.

CONTRIBUTIONS TO ADULT EDUCATION

Comparison of per capita state funding in 2010 for adults without a high school diploma

STATE	POPULATION (2010)	ADULT POPULATION WITHOUT HS DIPLOMA (% OF TOTAL STATE POPULATION)	STATE FUNDING (2010)	STATE FUNDING PER CAPITA WITHOUT HS DIPLOMA
TEXAS	**25,243,311**	**3,841,240 (15%)**	**$18,550,223**	**$4.83**
CALIFORNIA	37,330,448	6,151,072 (16%)	$653,666,000	$106.27
NEW YORK	19,389,160	2,713,244 (14%)	$83,292,246	$30.70
FLORIDA	18,849,600	2,621,801 (14%)	$238,276,083	$90.88
ILLINOIS	12,836,004	1,451,717 (11%)	$16,227,265	$11.18

SOURCE: U.S. Department of Education; Texas Comptroller of Public Accounts.

ADULT EDUCATION BY THE NUMBERS

In a 2012 report, the Texas Workforce Investment Council estimated that between **26,546** and **42,305** Texans were on a waiting list for adult education programs. The report found that **294** adult education providers have waiting lists. **Indiana** and **Washington** both provide workforce programs that are worth consideration for the way they are structured rather than the funding they achieve (see sidebar, right).

"UNDEREMPLOYED" COUNTERPARTS

Somewhere between employment and unemployment lies a category of workers called the underemployed. These workers haven't been able to find full-time work, but don't fit into the classic definition of unemployment. They may be working part-time jobs, or — worse yet — have given up looking for work entirely.

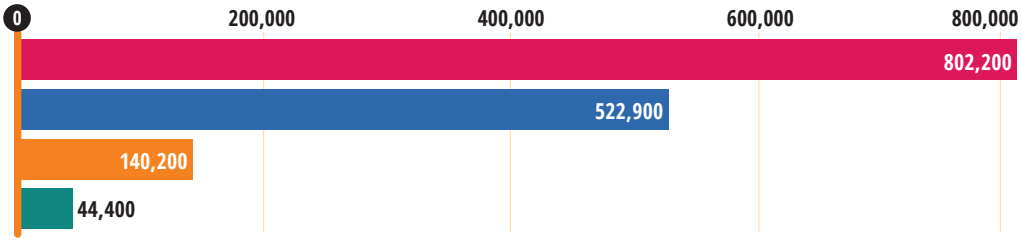
Underemployed workers represent a misutilization of manpower resources. Unable to find positions matching their credentials, they snatch up jobs that offer fewer hours or require less training.

For every **five unemployed Texans in December 2010**, there were **four additional** employees **who were either underemployed or had quit looking for work**, according to the Federal Reserve Bank of Dallas.

If given the proper training, Texas' underutilized employees could find lucrative positions in new fields (see Page 16 for programs that could retrain the unemployed).

UNDERUTILIZED TEXANS IN 2013

Unemployed and underemployed workers represent a misutilization of manpower resources.



The Bureau of Labor Statistics counts **UNEMPLOYED WORKERS** as those who have looked for a job in the last four weeks.

There are also workers who are involuntarily working **PART-TIME** jobs — many because they couldn't find a full-time option.

There are the **MARGINALLY ATTACHED**, who would like to work and have applied for jobs in the last year — just not in the past four weeks.

DISCOURAGED WORKERS, a subset of the marginally attached, have given up trying to find a job because they don't think they'll find one.

SOURCE: U.S. Bureau of Labor Statistics.

Here are two states that have designed model workforce development programs.

INDIANA

In 2010, Indiana overhauled its adult education system to encourage students to pursue industry-recognized certifications. The state's department of workforce development now manages adult education, and measures success based on the number of students who earn certifications.

WASHINGTON

Washington's system, called Integrated Basic Education and Skills Training (I-BEST), allows students to earn for-credit occupational credentials as they improve their basic skills. Students receive college reimbursement and need-based scholarships. A performance-based funding system directs additional money to colleges if students achieve specific instructional and credential milestones.

Texas' efforts to realign adult education with higher education are in part inspired by I-BEST.

SOURCE: National Council of State Directors of Adult Education.

AS MANY AS

42 THOUSAND

TEXANS COULD BE ON **WAITING LISTS** FOR AN ADULT EDUCATION PROGRAM.

SECTION FOUR HIGHLIGHTS

- Texans can pursue career security through a number of paths.
- College, career and technical education programs, industry certifications and apprenticeships provide four options.
- The Legislature has taken steps to make education more responsive to workforce needs.

PATHS TO SUCCESS

Jobs exist. Plenty of them. Good jobs, too, with high wages. Here are four paths to preparing Texas workers to fill them.

4 PATHS TO SUCCESS

PATH 1 — COLLEGE DEGREE

College-educated workers enjoy higher average lifetime earnings than high school graduates, and the wage gulf is widening. Projections show that many high-paying Texas occupations require at least an associate's degree (see page 8).

PATH 2 — CAREER AND TECHNICAL EDUCATION

These programs prepare students for college and careers. They supplement academic high school curriculum with employability skills and job-specific training, and a number of steps taken by the Legislature make it easier for high school students to pursue these courses.

PATH 3 — INDUSTRY-BASED CERTIFICATIONS

Associations or industry groups can certify workers who meet certain qualifications or skill standards. Full-time workers with these credentials have higher median earnings than those without.

PATH 4 — ON-THE-JOB APPRENTICESHIPS

This "earn as you learn" model allows participants to receive wages and mentorship as they pursue training. While these programs have traditionally been limited to a select group of occupations, new legislation may open the door to additional industries.

PATH 1

THE COLLEGE DEGREE

In a 2011 report, the Georgetown University Center on Education and the Workforce released a report finding that, "on average, people with more education make more than those with less."

Average lifetime earnings a worker can expect, according to the report:

- A high school dropout: $973,000
- High school diploma: $1.3 million
- Some college but no degree: $1.5 million
- Associate's degree: $1.7 million
- Bachelor's degree: $2.3 million

Meanwhile, a Georgetown University study found a widening salary disparity based on diploma type.

LIFETIME EARNINGS: BACHELOR'S DEGREE VS. HIGH SCHOOL DIPLOMA

75%

AVERAGE SALARY DIFFERENCE IN 2002

84%

AVERAGE SALARY DIFFERENCE IN 2014

While enrollment in Texas' colleges and universities continues growing, not all students are prepared — or interested — in pursuing four-year programs, making them less likely to graduate. Their interests could be better served by pursuing one of the other educational paths highlighted in this report.

Only **56 percent** of Texas public university students earned a degree within six years of enrolling, according to the Texas Higher Education Coordinating Board.

RECOMMENDATION

Find out how Texas could increase higher education rates.
See pages 20-21.

EARLY COLLEGE HIGH SCHOOL PROGRAMS

A 2014 report from the American Institutes for Research found that students who attend an Early College High School program (ECHS) are more likely to enroll in college and earn a degree.

These programs partner with community colleges, allowing their students to earn a high school diploma and either an associate's degree or at least 60 credit hours toward a bachelor's degree.

- These programs focus on students who would potentially be at risk of not completing high school under a traditional model. They provide small-school settings and make it possible for students to earn both a high school diploma and an associate's degree by the time they complete high school.
- There are 58 operating ECHS campuses in Texas, and seven more ECHS campuses focused on science, technology, engineering and math.
- This makes Texas a **pioneer** in the ECHS movement.
- Though more campuses are in development, significant portions of the state are not served by these programs.
- The Texas Education Agency (TEA) approved **additional** ECHS programs in February 2014, bringing the total to **108** for the 2014-15 school year.
- A recent national study estimated **30 percent** of ECHS graduates left high school with a postsecondary credential.

CASE STUDY

GRANT: PREPARES FOR COLLEGE WHILE IN HIGH SCHOOL

Grant attended an American YouthWorks alternative high school.

Thanks to programs facilitated by his local workforce development center, Grant received college credit, professional experience repairing computers, certification and more than $4,000 in scholarships.

Now studying biology at a community college, he plans to transfer to a four-year university. He also works part-time for a computer support company. His skills earn him $35 an hour.

SOURCE: Workforce Solutions Capital Area.

PATH 2

CAREER AND TECHNICAL EDUCATION (CTE)

Career and Technical Education (CTE) programs prepare students for college and careers. They supplement academic curriculum with employability skills and job-specific technical training.

Programs are designed to prepare students either to continue their education or gain entry-level employment in high-skill, high-wage jobs. Students pursue training through 16 clusters, administered through partnerships between high schools, career centers, community and technical colleges and universities.

81%

OF DROPOUTS SAID RELEVANT, REAL-WORLD LEARNING OPPORTUNITIES WOULD HAVE KEPT THEM IN HIGH SCHOOL, ACCORDING TO THE ASSOCIATION FOR CAREER AND TECHNICAL EDUCATION.

JET UPDATE

The Comptroller's *Texas Works* report, released in 2008, recommended a Jobs and Education for Texans (JET) fund, which was approved by the Legislature in 2009.

JET provides grants that help Texans get technical training for careers in fast-growing, "high-demand" occupations. These include high-paying fields such as high-tech manufacturing, computer support, nursing and allied health professions. Specifically, grants under the Job Building Fund help community colleges acquire buildings and equipment needed to train workers for these high-growth industries.

Since its inception, the JET Job Building Fund has issued **$26.7 million** through **118** grant awards. JET equipment grants are projected to serve more than **69,000 students**, providing a net salary increase of **$22,000 per student** who completes a program using JET-funded equipment.

RECOMMENDATION

Find out how Texas can encourage students to pursue CTE to attain lucrative careers. See pages 20-21.

New legislation may make it easier for high schoolers to pursue CTE training.

Beginning in the 2014-15 school year, students will pursue graduation plans with intensive focus on college or career readiness.

CTE tracks will supplement academic teaching with coursework focused on job-specific preparation.

FIVE AREAS OF DEGREE ENDORSEMENT

- SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM)
- BUSINESS AND INDUSTRY
- PUBLIC SERVICES
- ARTS AND HUMANITIES
- MULTIDISCIPLINARY STUDIES

THE DISCONNECT

But will Texas students pursue this coursework? CTE courses may lead to "high-wage, high-skill and high-demand careers," as the Association for Career & Technical Education suggests, but the public may not be getting this message.

In an annual study by Deloitte, Americans consistently rank manufacturing **near the top** of industries most important to the national economy. Yet manufacturing ranks **second to last** as a career choice.

Texas should do a better job of broadcasting CTE's positive outcomes.

THE 2013 LEGISLATURE

established the state's first charter high school for adults. The Excel Center will launch in August 2014 for students ages 19-50. A five-year pilot program, the school will seek to increase the graduation rate of high school dropouts. It is expected to reach 150 students in its first year, providing flexible education delivery to help students develop career skills and attain industry certifications in high-demand occupations. An advisor will work with each student, and the program offers childcare and transportation services.

PATH 3 INDUSTRY-BASED CERTIFICATIONS

Associations or industry groups can certify workers who meet certain qualifications or skill standards.

Full-time workers with these credentials have higher median earnings than those without. Yet Texas has **no mechanism for determining how many of its residents receive certification through this process**.

Industry-based certifications are not explicitly included in the system of state workforce training performance measures, and neither the Texas Higher Education Coordinating Board nor the Texas Workforce Commission tracks them.

This lack of oversight could lead to issues with the skills pipeline, and Texas has no statewide way of assessing whether workers are adequately prepared to meet the needs of the labor force.

25%

SHARE OF U.S. ADULTS WHO HAD A NON-DEGREE CREDENTIAL IN FALL 2012, ACCORDING TO A REPORT RELEASED IN JANUARY 2014 BY THE U.S. CENSUS BUREAU.

RECOMMENDATION

Find out how Texas could streamline industry-based certifications. See pages 20-21.

WORK SMARTER

Learn about post-secondary certification programs that rapidly respond to the high-demand workforce needs of businesses and communities. Visit www.TXworkers.org/training/.

PATH 4 ON-THE-JOB APPRENTICESHIPS

Apprenticeships provide a proven model for filling middle-skill occupations (jobs that require more than a high school diploma but less than a four-year degree).

In this "earn as you learn" model, participants receive wages and mentorship as they pursue training. Texas has:

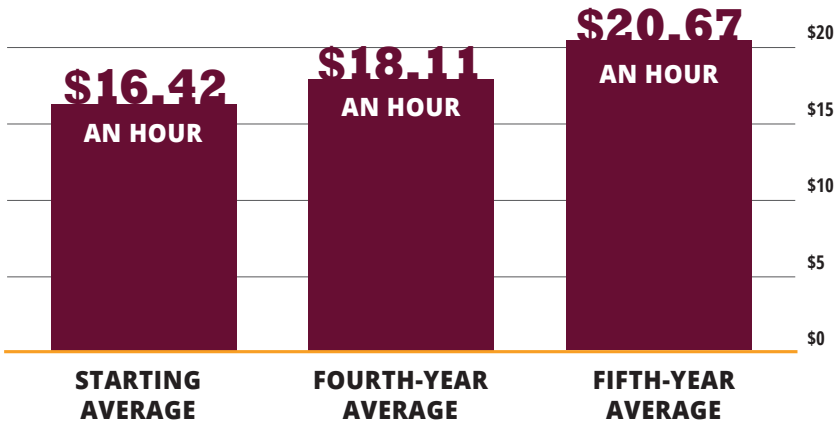
11,591	406	82%
active apprentices	active programs	completion rate

SOURCE: Texas Workforce Investment Council.

In 2008, the U.S. Department of Labor approved revisions to federal apprenticeship regulations that enable a wider variety of industries and occupations to use the registered apprenticeship model.

Traditional apprenticeships in fields such as construction and manufacturing can now be used in those including community health and information technology. Texas launched a pilot program to test the flexibility of apprenticeships to adapt across a number of industries. The initiative produced positive results, showing that in many cases the model can be replicated.

APPRENTICE EARNINGS



CASE STUDY

JONATHAN:

MAKING A MID-CAREER TRANSITION

After an honorable discharge from the military, Jonathan served in the civilian workforce for nearly 25 years.

When he got laid off, he decided to change his career path to healthcare. Through the Workforce Investment Act program at his local workforce development center, Jonathan worked with a career counselor and received financial support for non-tuition school costs as he pursued an associate's degree. He is now a staff nurse with a prominent local hospital system.

SOURCE: Workforce Solutions Capital Area.

RECOMMENDATIONS

CONCLUSION

The Texas economy provides plenty of promise. And it can deliver on that promise if it can effectively provide meaningful post-secondary training opportunities for its workers — no matter where they are in their careers.

1. Texas needs a sustained information campaign to encourage students to pursue Career and Technical Education (CTE) and industry-specific certification programs.

The Texas economy relies on workers with specialized knowledge and technical expertise. And these career tracks provide a ready source of middle-wage professions. Yet unfairly negative perceptions of CTE and certification programs drive many bright students away from these potentially lucrative career paths. At the same time, an increasing number of young Texans are pursuing higher education only to drop out or rack up debt in pursuit of a degree that does not prepare them for employment.

Texas needs to coordinate a sustained multimedia campaign that dispels negative associations with CTE and certification programs. This campaign would highlight salaries and benefits, profile successful careers and describe exciting workplace opportunities that can result from CTE training.

2. Texas should consider continuing to increase the number of Texas Early College High School (ECHS) campuses as approved by the Texas Education Agency (TEA), if evidence shows their ongoing effectiveness.

ECHS programs offer both high school and college curricula in a simultaneous educational experience for students who would potentially be at risk of either not completing high school or not continuing to college. Students can earn up to 60 college credit hours while earning their high school diploma.

An ECHS impact study released in January 2014 by American Institutes for Research found that, on a national level, 81 percent of Early College students enrolled in college, compared with 72 percent of non-ECHS students. During the study period, 25 percent of Early College students earned a college degree, as compared with only 5 percent of non-ECHS students.

Early funders of Texas ECHS campuses include the Office of the Governor, the Texas Education Agency, Bill & Melinda Gates Foundation, the Michael & Susan Dell Foundation and National Instruments, making Texas a pioneer in the ECHS movement.

While ECHS program staff at TEA collaborate with organizations such as the Texas Higher Education Coordinating Board to evaluate ECHS' performance on measures of college readiness, TEA lacks the resources to consistently and systematically evaluate the performance of all ECHS campuses on all relevant measures. The Legislature should consider appropriating sufficient funds, especially given the current rate of ECHS expansion across the state.

If evaluation measures continue to show the positive effects of ECHS campuses, we also recommend increasing their number in Texas. While 108 such programs will operate in the 2014-15 school year, some geographical areas of Texas remain underserved.

3. Texas should increase the accessibility of Adult Education Provider services.

Texans who lack the basic education required to rise above minimum-wage jobs may struggle to achieve stability — or they can be viewed as an untapped resource. In 2011, an estimated **25,546** to **42,305** Texans were on a waiting list for adult education programs.

Over the long-term, adult education services can provide a positive return on investment (ROI) for both participants and the public. A 2012 study discussing the benefits, costs and rates of return for Washington's Postsecondary CTE Programs found that, when weighing educa-

tion costs against earnings increases, participants enjoyed a lifetime ROI as high as **8.86 percent**. Society as a whole (including taxpayers) benefited as much as **6.7 percent** due to factors such as higher earnings over the same period.

Texas ranks low in the funding it provides for adult education compared to the portion of its population that lacks a high school diploma. The Legislature should increase funding for Adult Education Provider services, or look to model states (see Page 15) for examples of how to streamline programs to reduce waiting lists.

4. Texas should track involvement and completions in industry-based certificate programs.

Texas does not track the number of people who receive industry-based certifications, which are shown to increase median wages for recipients and can provide a pipeline of prepared workers for key industries.

In a 2010 report, Complete College America stated that Kentucky found that workers who earned certificates of at least one year or more saw average **income increases nearly identical to returns from associate's degrees**.

The report noted, however, that economists and policymakers have done little research into the benefits of sub-baccalaureate credentials. What state-level research does exist tends to show that "long-term certificates have significantly higher labor market value than short-term certificates because of their greater technical and academic rigor, and because of the wider range of job-related skills they provide graduates."

Certifications are not explicitly part of state workforce training performance measures, meaning that Texas is implementing and evaluating policy using an incomplete picture of the higher education and workforce certification landscape.

The Workforce Data Quality Campaign noted in a recent issue of "Credential Data Pioneers" that colleges, states and the federal government have traditionally tracked the attainment of bachelor's and associate's degrees, but recent research suggests that there are other types of credentials that matter to employers.

Some states in particular have made strides to incorporate industry-based certifications and other non-degree credentials into their workforce data systems. Texas should do the same.

5. Texas should consider incentives for companies that adopt apprenticeships. It should also develop an information campaign to encourage program adoption.

Apprenticeships could provide a ready source of the skilled workers Texas will need for rapidly growing and evolving industries. Registered apprenticeships offer Texans an opportunity to receive wages while training to fill skilled positions. According to Mathematica Policy Research, workers who complete such training see an average $240,000 increase in lifetime earnings.

A recent pilot program conducted by the Texas Workforce Investment Council found that the apprenticeship model works in fields such as allied healthcare, energy and information technology. Financial incentives would help encourage adoption of these programs by employers that are responsible for paying apprenticeship wages.

In addition to providing incentives, the Legislature should consider implementation of an information campaign to market the benefits of apprenticeship programs for employers, and provide resources to assist with program development . According to a June 2014 report by the Hamilton Project, South Carolina recently adopted this approach, which resulted in drastic increases in its registered apprenticeship programs.

ALAMO COLLEGES OFFER APPRENTICESHIP MODEL

San Antonio's Alamo Community College District (ACCD), also called the Alamo Colleges, has partnered with local companies, school districts, universities and other organizations to provide high-quality programs that combine academics and job training, helping San Antonio industries shore up shortages of qualified candidates for skilled positions. According to a San Antonio Manufacturers Association study, at least 2,500 manufacturing jobs in the region had gone unfilled due to a lack of qualified candidates.

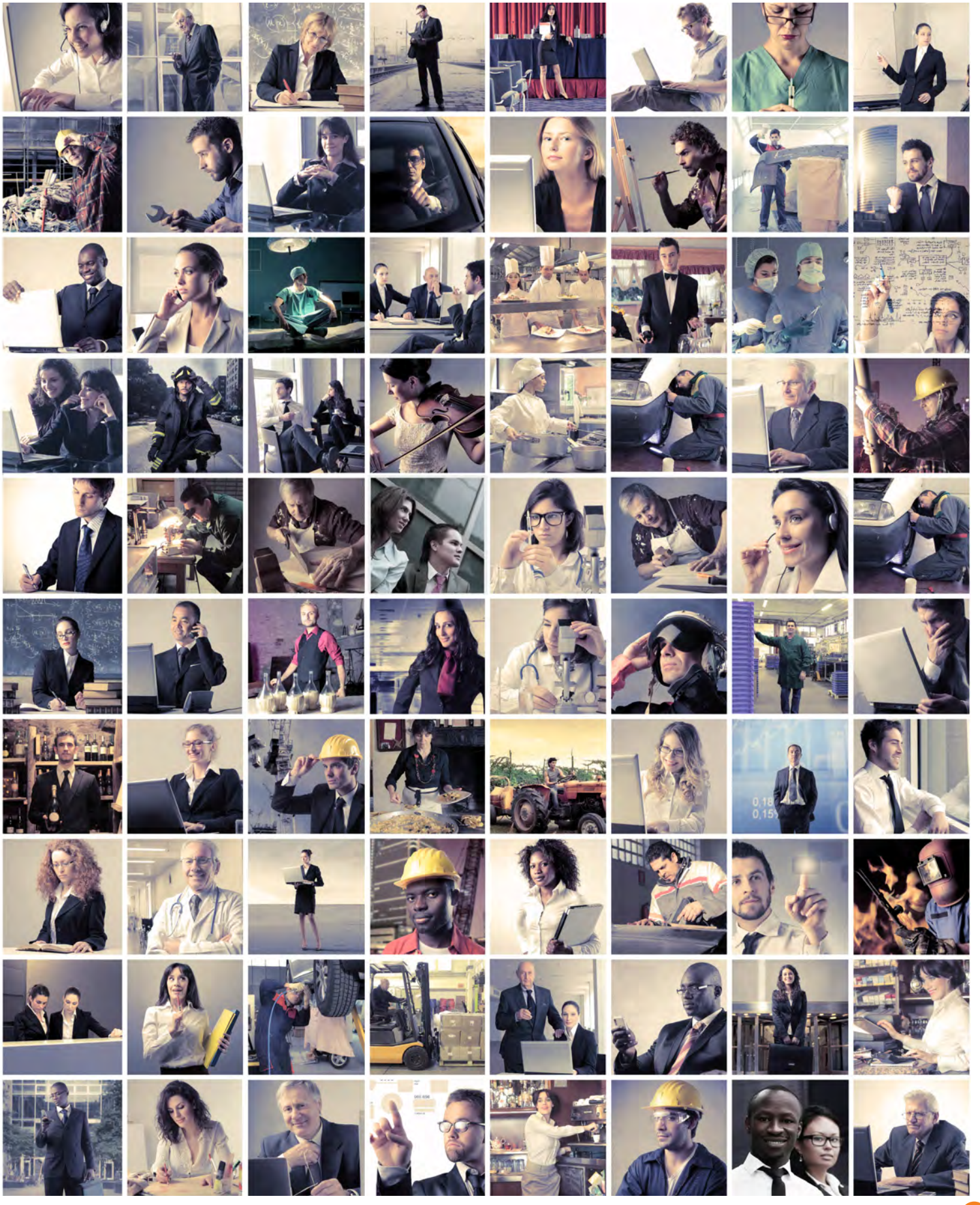
ACCD offers more than 425 degree and certificate programs in fields such as health care, aviation, advanced manufacturing and information technology. It provides customized training, seminars and workshops for area employers.

Toyota and Alamo Colleges created the Toyota Advanced Manufacturing Technician (AMT) program, a two-year associate's degree. Students spend three days each week at the Toyota Manufacturing plant, where they acquire hands-on experience. They are paid about $30,000 over the two years, and according to the **U.S. Department of Labor**, they may become eligible for entry-level, full-time positions earning **$22 an hour**.

In July, U.S. Labor Secretary Thomas Perez touted the program, saying the federal government is looking to build more such programs as it emphasizes apprenticeship development (see Recommendation 5).

RESOURCES

PROGRAM	DESCRIPTION	LINK
Adult Education and Literacy	This program provides basic education services for adults and assists with college and workforce placements.	http://www.twc.state.tx.us/svcs/adultlit/adult-basic-education.html
Apprenticeship Training Program	Get an overview and links to Texas apprenticeship opportunities.	http://www.twc.state.tx.us/svcs/apprentice/apprentice.html
College Measures	Those entering college can use this interactive database to explore programs at two- and four-year schools and related employment and earnings outcomes.	http://www.collegemeasures.org/
Early College High School	Find resources and links to early college high school opportunities and programs in Texas.	http://www.tea.state.tx.us/index2.aspx?id=4464&menu_id=814
Employment Support Resources	This Texas Workforce Commission site provides resources for workers needing to balance childcare and transportation services, food and housing expenses, and government assistance programs.	http://www.twc.state.tx.us/customers/jsemp/employment-support-resources.html
Jobs and Education for Texans (JET)	JET funds provide grants that help Texans get technical training for careers in fast-growing, "high-demand" occupations. These include high-paying fields such as high-tech manufacturing, computer support, nursing and allied health professions. Specifically, grants under the Job Building Fund help community colleges acquire building and equipment needed to train workers for these high-growth industries.	http://www.everychanceeverytexan.org/funds/
The Manufacturing Institute's Skills Certification System	This system provides skills certification programs in manufacturing and methods to more efficiently recruit and train employees in efforts to reduce skills shortages.	http://www.themanufacturinginstitute.org/Skills-Certification/Skills-Certification-System.aspx
SkillsUSA	SkillsUSA connects students, education and industry leaders with resources to create a highly skilled workforce.	http://www.skillsusa.org/
Texas Genuine	This interactive tool allows users to explore career and technical education programs in Texas and related career paths.	http://www.texasgenuine.org/
Texas Skills Standard Board	This board develops Texas' skill and industry standards for occupations that are in high demand and do not require a bachelor's degree.	http://www.tssb.org/
Texas Tuition Promise Fund	A college savings plan that allows families and individuals to prepay some or all future tuition and fees at a fixed cost to any two- or four-year Texas public college or university.	http://www.texastuitionpromisefund.com
Texas Works 2008	A 2008 Comptroller report that analyzed the training and skills required in the Texas workforce and provided the impetus for the creation of the JET program.	http://www.window.state.tx.us/specialrpt/workforce/
Veteran Resources	Find resources for veterans transitioning to civilian life, applying military skills to civilian occupations and expedited college credits.	http://www.twc.state.tx.us/customers/jsemp/veterans.html
Work in Texas	The Texas Workforce Commission's jobs database provides career assistance and personalized job matching.	https://wit.twc.state.tx.us/WORKINTEXAS/wtx?pageid=APP_HOME&cookiecheckflag=1
Workforce Data Quality Campaign	The campaign supports strategic data collection across the education and workforce spectrum to inform decisions and improve workforce skills and industry competitiveness.	http://www.workforcedqc.org/
Workforce Solutions and Local Workforce Development Boards	The 28 local workforce boards in Texas provide job placement and training assistance.	http://www.twc.state.tx.us/dirs/wdbs/workforce-development-boards-websites.html



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www.TXworkers.org
Texas Comptroller of Public Accounts

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